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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/803,289	03/09/2001	Dayong Chen	P12595-US1 (011317-58)	7132

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EXAMINER

ESCALANTE, OVIDIO

ART UNIT	PAPER NUMBER
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2645

DATE MAILED: 02/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/803,289

Applicant(s)

CHEN, DAYONG

Examiner

Ovidio Escalante

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement submitted on 03 December 2001 was received. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karlsson et al. US Patent 5,898,928 in view of Wallstedt WO 00/74415 A1.

Regarding claim 1, Karlsson teaches a method of automatically reallocating previously removed frequencies (col. 3, lines 5-10; col. 14, lines 7-18) to be used as allocated frequencies in order to maintain traffic capacity in a wireless communication system operable for automatic

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frequency allocation (col. 2, lines 54-57) wherein each removed frequency has an associated interference level, (col. 1, lines 48-64), the method comprising:

determining if a number of allocated frequencies is less than a minimum number of allocated frequencies required to maintain traffic capacity, (col. 3, lines 11-45);

selecting a proposed group of frequencies having the lowest acceptable interference levels if the number of allocated frequencies is less than the minimum number, (col. 2, lines 60-65; col. 4, lines 47-53; col. 9, lines 52-55); and

reallocating frequencies in a final group of frequencies, (col. 2, lines 60-65; col. 13, lines 43-50).

While Karlsson teaches of selecting a group of frequencies having the lowest acceptable interference, Karlsson does not specifically teach that each removed frequency has a penalty time and wherein the selection includes selecting a frequency with the shortest penalty time.

In the same field of endeavor, Wallstedt teaches of a method for removing and reestablishing frequencies, (abstract). Wallstedt further teaches of reestablishing frequencies based upon a penalty time and interference level of each frequency, (page 2, lines 23-26; page 9, lines 6-12). The automatic frequency allocation method selects a frequency that has the lowest amount of interference and wherein the penalty time of the frequency is lower than a predefined threshold, (page 9, lines 6-12; fig. 6).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the selection of frequencies by Karlsson by accepting also frequencies with the lowest penalty time as taught by Wallstedt so that the selected frequencies can have the lowest possible interference. That is, since a penalty time is given to each

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frequency based on the amount of interference then by selecting frequencies with the lowest penalty then the system of Karlsson will be able to select frequencies for reallocation that have the lowest interference.

Regarding claim 2, Karlsson teaches wherein selecting the proposed group of frequencies having the lowest acceptable interference levels from among available frequencies further comprises:

selecting a starting group of frequencies having the lowest interference levels, (col. 4, lines 47-53); and

selecting the proposed group of frequencies from the starting group of frequencies, wherein each frequency in the proposed group of frequencies has an interference level below a maximum acceptable interference level, (col. 2, lines 60-65; col. 9, lines 52-55).

Regarding claims 3 and 4, Karlsson in view of Wallstedt, as applied above, teach wherein selecting the final group of frequencies from the proposed group of frequencies by placing in the final group, the frequencies from the proposed group that have the shortest acceptable penalty time further comprises:

selecting an intermediate group of frequencies from the proposed group of frequencies by placing in the intermediate group, the frequencies from the proposed group that have the shortest penalty time, (page 2, lines 23-26; page 9, lines 6-12; fig. 6); and

selecting the final group of frequencies from the intermediate group of frequencies, wherein each frequency in the final group of frequencies has a current penalty time below a maximum acceptable penalty time, (page 2, lines 23-26; page 9, lines 6-12; fig. 6).

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Regarding claim 5, Karlsson teaches an apparatus for automatically reallocating previously removed frequencies (col. 3, lines 5-10; col. 1, lines 7-18) to be used as allocated frequencies in order to maintain traffic capacity in a wireless communication system operable for automatic frequency allocation (col. 2, lines 54-57) wherein each removed frequency has an associated interference level, (col. 1, lines 48-64), the apparatus comprising:

means for determining if a number of allocated frequencies is less than a minimum number of allocated frequencies required to maintain traffic capacity, (col. 3, lines 11-45);

means for selecting a proposed group of frequencies having the lowest acceptable interference levels, (col. 2, lines 60-65; col. 4, lines 47-53; col. 9, lines 52-55); and

means for reallocating frequencies in a final group of frequencies to be used as allocated frequencies, (col. 2, lines 60-65; col. 13, lines 43-50).

While Karlsson teaches of means for selecting a group of frequencies having the lowest acceptable interference, Karlsson does not specifically teach that each removed frequency has a penalty time and wherein the selection includes selecting a frequency with the shortest penalty time.

In the same field of endeavor, Wallstedt teaches of means for removing and reestablishing frequencies, (abstract). Wallstedt further teaches of reestablishing frequencies based upon a penalty time and interference level of each frequency, (page 2, lines 23-26; page 9, lines 6-12). The automatic frequency allocation method selects a frequency that has the lowest amount of interference and wherein the penalty time of the frequency is lower than a predefined threshold, (page 9, lines 6-12).

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Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the selection of frequencies by Karlsson by accepting also frequencies with the lowest penalty time as taught by Wallstedt so that the selected frequencies can have the lowest possible interference. That is, since a penalty time is given to each frequency based on the amount of interference then by selecting frequencies with the lowest penalty then the system of Karlsson will be able to select frequencies for reallocation that have the lowest interference.

Regarding claim 6, Karlsson teaches a programmed radio exchange operable for automatic frequency allocation (col. 3, lines 5-10) wherein a frequency with an interference level is removed from an allocated set of frequencies when interference is detected on the frequency, (col. 2, lines 54-57), the exchange further being enabled by a computer program to automatically reallocate previously removed frequencies to be used as allocated frequencies in order to maintain traffic capacity, (col. 2, lines 48-64; col. 1, lines 48-64), the computer program comprising:

program code for determining if a number of allocated frequencies is less than a minimum number of allocated frequencies required to maintain traffic capacity, (col. 3, lines 11-45);

program code for selecting a proposed group of frequencies having the lowest acceptable interference levels, (col. 2, lines 60-65; col. 4, lines 47-53; col. 9, lines 52-55); and

program code for reallocating frequencies in a final group of frequencies to be used as allocated frequencies, (col. 2, lines 60-65; col. 13, lines 43-50).

While Karlsson teaches of program code for selecting a group of frequencies having the lowest acceptable interference, Karlsson does not specifically teach that each removed frequency has a penalty time and wherein the selection includes selecting a frequency with the shortest penalty time.

In the same field of endeavor, Wallstedt teaches of program code for removing and reestablishing frequencies, (abstract). Wallstedt further teaches of reestablishing frequencies based upon a penalty time and interference level of each frequency, (page 2, lines 23-26; page 9, lines 6-12). The automatic frequency allocation method selects a frequency that has the lowest amount of interference and wherein the penalty time of the frequency is lower than a predefined threshold, (page 9, lines 6-12; fig. 6).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the selection of frequencies by Karlsson by accepting also frequencies with the lowest penalty time as taught by Wallstedt so that the selected frequencies can have the lowest possible interference. That is, since a penalty time is given to each frequency based on the amount of interference then by selecting frequencies with the lowest penalty then the system of Karlsson will be able to select frequencies for reallocation that have the lowest interference.

Regarding claim 7, Karlsson teaches wherein the selecting of the proposed group of frequencies is accomplished by sorting available frequencies according to interference level and selecting only those frequencies which have both lowest interference levels and interference levels below a maximum acceptable interference level, (col. 2, lines 60-65; col. 4, lines 47-53).

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Regarding claims 8 and 9, Karlsson in view of Wallstedt, as applied above, teach wherein the selecting of the final group of frequencies is accomplished by sorting available frequencies according to current penalty time and selecting only those frequencies which have both lowest penalty times and penalty times below a maximum acceptable penalty time, (page 2, lines 23-26; page 9, lines 6-12; fig. 6).

Regarding claim 10, Karlsson teaches a computer program product for enabling a radio exchange to automatically reallocate previously removed frequencies, (col. 3, lines 5-10; col. 14, lines 7-18), each having an interference level, to be used as allocated frequencies in order to maintain traffic capacity, (col. 1, lines 48-64; col.2, lines 54-57;), the computer program product comprising a computer program further comprising:

instructions for determining if a number of allocated frequencies is less than a minimum number of allocated frequencies required to maintain traffic capacity, (col. 3, lines 11-45);

instructions for selecting a proposed group of frequencies having the lowest acceptable interference levels, (col. 2, lines 60-65; col. 4, lines 47-53; col. 9, lines 52-55);

instructions for reallocating frequencies in the final group of frequencies to be used as allocated frequencies, (col. 2, lines 60-65; col. 13, lines 43-50).

While Karlsson teaches of selecting a group of frequencies having the lowest acceptable interference, Karlsson does not specifically teach that each removed frequency has a penalty time and wherein the selection includes selecting a frequency with the shortest penalty time.

In the same field of endeavor, Wallstedt teaches of instructions for removing and reestablishing frequencies, (abstract). Wallstedt further teaches of reestablishing frequencies based upon a penalty time and interference level of each frequency, (page 2, lines 23-26; page 9,

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lines 6-12). The automatic frequency allocation instructions selects a frequency that has the lowest amount of interference and wherein the penalty time of the frequency is lower than a predefined threshold, (page 9, lines 6-12).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the selection of frequencies by Karlsson by accepting also frequencies with the lowest penalty time as taught by Wallstedt so that the selected frequencies can have the lowest possible interference. That is, since a penalty time is given to each frequency based on the amount of interference then by selecting frequencies with the lowest penalty then the system of Karlsson will be able to select frequencies for reallocation that have the lowest interference.

Regarding claim 11, Karlsson teaches wherein instructions for selecting of the proposed group of frequencies further comprises:

instructions for sorting available frequencies according to interference level and selecting only those frequencies which have lowest interference levels, (col. Lines 47-53); and

instructions for selecting frequencies that have interference levels below a maximum acceptable interference level, (col. 2, lines 60-65; col. 9, lines 52-55).

Regarding claims 12 and 13, Karlsson in view of Wallstedt teach wherein the instructions for selecting the final group of frequencies further comprises:

instructions for sorting frequencies in the proposed group of frequencies according to current penalty time and selecting only those frequencies which have lowest penalty times; and instructions for selecting frequencies which have penalty times below a maximum acceptable penalty time, (page 2, lines 23-26; page 9, lines 6-12).

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5. Claims 14 and 15 rejected under 35 U.S.C. 103(a) as being unpatentable over Wallstedt WO 00/74415 A1 in view of Karlsson US Patent 5,898,928.

Regarding claim 14, Wallstedt teaches a wireless communication system enabled for automatic frequency allocation (abstract) comprising:

at least one transceiver, (page 7, lines 20-25);

at least one scanner for measuring received signal strength (RSS) on one or more frequencies, (page 7, lines 20-25); and

a radio exchange system connected to the scanner and the transceiver, (figs. 1 and 2; page 7, lines 17-29), the radio exchange system further comprising a radio control unit operable to derive an interference sample for each frequency measured by the scanner and execute a reallocation process (page 8, lines 7-16) reallocates frequencies based on current penalty times and interference levels, (page 2, lines 23-26; col. 9, lines 6-12; fig. 6).

Wallstedt does not specifically teach of reallocating the frequencies based upon traffic capacity.

Karlsson teaches that it was well known in the art to have a wireless communication system that determines if a number of allocated frequencies is less than a minimum number of allocated frequencies required to maintain traffic capacity and if and when the number of allocated frequencies is less than the minimum number, (col. 3, lines 11-45; col. 4, lines 47-53; col. 9, lines 52-55).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Wallstedt by reallocating the frequencies based

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upon traffic capacity as taught by Karlsson so that traffic congestion can be lowered using the best available frequencies.

Regarding claim 15, Wallstedt teaches wherein the radio exchange system further comprises a slow low pass filter disposed between the radio control unit and the reallocation process so that the interference levels are based on slow filtered RSS samples, (page 8, lines 12-21).

Conclusion

6. Any response to this action should be mailed to:

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

or faxed to:

(703) 872-9306, (for formal communications intended for entry)

Or:

(703) 872-9314, (for informal or draft communications, please label
"PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

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7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ovidio Escalante whose telephone number is (703) 308-6262. The examiner can normally be reached on Monday to Friday from 6:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang, can be reached on (703) 305-4895. The fax phone number for this Group is (703) 872-9306.

Communications via Internet e-mail regarding this application, other than those under 35 U.S.C. 132 or which otherwise require a signature, may be used by the applicant and should be addressed to [fan.tsang@uspto.gov].

All Internet e-mail communications will be made of record in the application file. PTO employees do not engage in Internet communications where there exists a possibility that sensitive information could be identified or exchanged unless the record includes a properly signed express waiver of the confidentiality requirements of 35 U.S.C. 122. This is more clearly set forth in the Interim Internet Usage Policy published in the Official Gazette of the Patent and Trademark on February 25, 1997 at 1195 OG 89.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Ovidio Escalante
Examiner
Group 2645
February 13, 2004

FAN TSANG
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

